ON LAVENDULITE FROM CHILI, S. A.

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In some of the huge blocks of cobalt ore from Chili, which were on exhibition in Fairmount Park last year, blue irregular veins of a mineral were observed; this blue mineral was supposed to be the Lavendulan of Breithaupt.

The Lavendulan was first found at Annaberg, Saxony, but only in very small quantities, insufficient for the making of a quantitative analysis. Prof. Plattner as well as Mr. Lindacker—the latter found the second locality somewhere in the Austrian Empire—agree that it is composed of the oxides of arsenic, copper, cobalt, nickel, and water.

I found in the Lavendulite from Chili the same elements, besides some impurities, as lime, oxide of iron, and insoluble matter which were impossible to separate mechanically.

It occurs in a gray rough rock which seems to be Trachyte, and it is associated with Erythrite, the latter sometimes finely crystallized. Although the lavender blue mineral seems to be, in some specimens, the most conspicuous, it is, nevertheless, on close examination found to be intimately mingled with the gray granules of Trachyte in which it is found. This circumstance makes it very tedious and difficult to separate the pure substance for analysis. The best or purest which I could obtain was but 77.58 per cent.

I noticed with the lens that the substance is an aggregation of very minute crystals, the length being in some of the thin veins equal to the thickness of the vein. Its hardness I could not determine, because the fragments separated from the rock were too small for observation. The specific gravity I did not take on account of the impurities present. Prof. Breithaupt found for the Lavendulan from Annaberg: H = 2.5 — 3, and S. G. = 3.014.

Color lavender-blue; the powder produced is paler.

The lustre is slightly resinous, almost dull; its fracture is indeterminable in the small fragments I possessed. If a fragment is held in the flame of the Bunsen burner, it fuses readily, coloring the flame green and changing the blue color of the mineral to black.

Heated in the closed tube it affords water.

On charcoal with carbonate of soda it gives copper and a strong alliaceous odor indicating arsenic.

With borax in O. F. a blue glass is obtained.

In water it seems to be insoluble.

Hydrochloric acid dissolves it easily if heated, and affords a green solution.

The following is the quantitative result of an examination of all the elements:—

$\ddot{A}s$	= 36.38	per cent.
$\dot{C}u$	= 31.11	"
$\dot{C}o$	= 1.95	"
$\dot{N}i$	= 1.05	"
$\dot{H}$	= 7.09	"
$\ddot{F}$	= 6.38	"
$\dot{C}a$	= 3.23	"
Insol.	= 11.61	"
	98.80	"

On subtracting the impurities from the sum found, there remained 77.58 per cent.; this is considered the quantity of pure substance contained in the mixture, which, as remarked before, could not be had any better. If we resolve the remainder to a hundred, the numbers will then stand thus:—

$\ddot{A}s$	= 46.89	per cent.	contains	16.30	of oxygen.	
$\dot{C}u$	= 40.10	"	"	8.27	"	}
$\dot{C}o$	= 2.51	"	"	0.53	"	} = 9.08
$\dot{N}i$	= 1.35	"	"	0.28	"	}
$\dot{H}$	= 9.13	"	"	8.11	"	

The oxygen ratios of

$$\ddot{A}s : \dot{R} : \dot{H} = 5.4 : 3.02 : 2.7,$$

or, adopting for it 5 : 3 : 3, it will afford the formula:—

$$\ddot{A}s\ (\dot{C}u,\dot{C}o,\dot{N}i)^3 + \dot{H}^3.$$

This formula would require these values:—

$\ddot{A}s$ = 44.04 per cent.

Assuming only

$\dot{C}u$ = 45.61 per cent.

$\dot{H}$ = 10.30 "

The respective equivalents of the oxides of cobalt and nickel being lower than the equivalents of the oxide of copper, in the last theoretical quantities, the $\dot{C}u$ is necessarily greater. The specimens for analysis were furnished by the curators of the Academy.